FORT DRUM ENERGY PROGRAM

5 February 2005

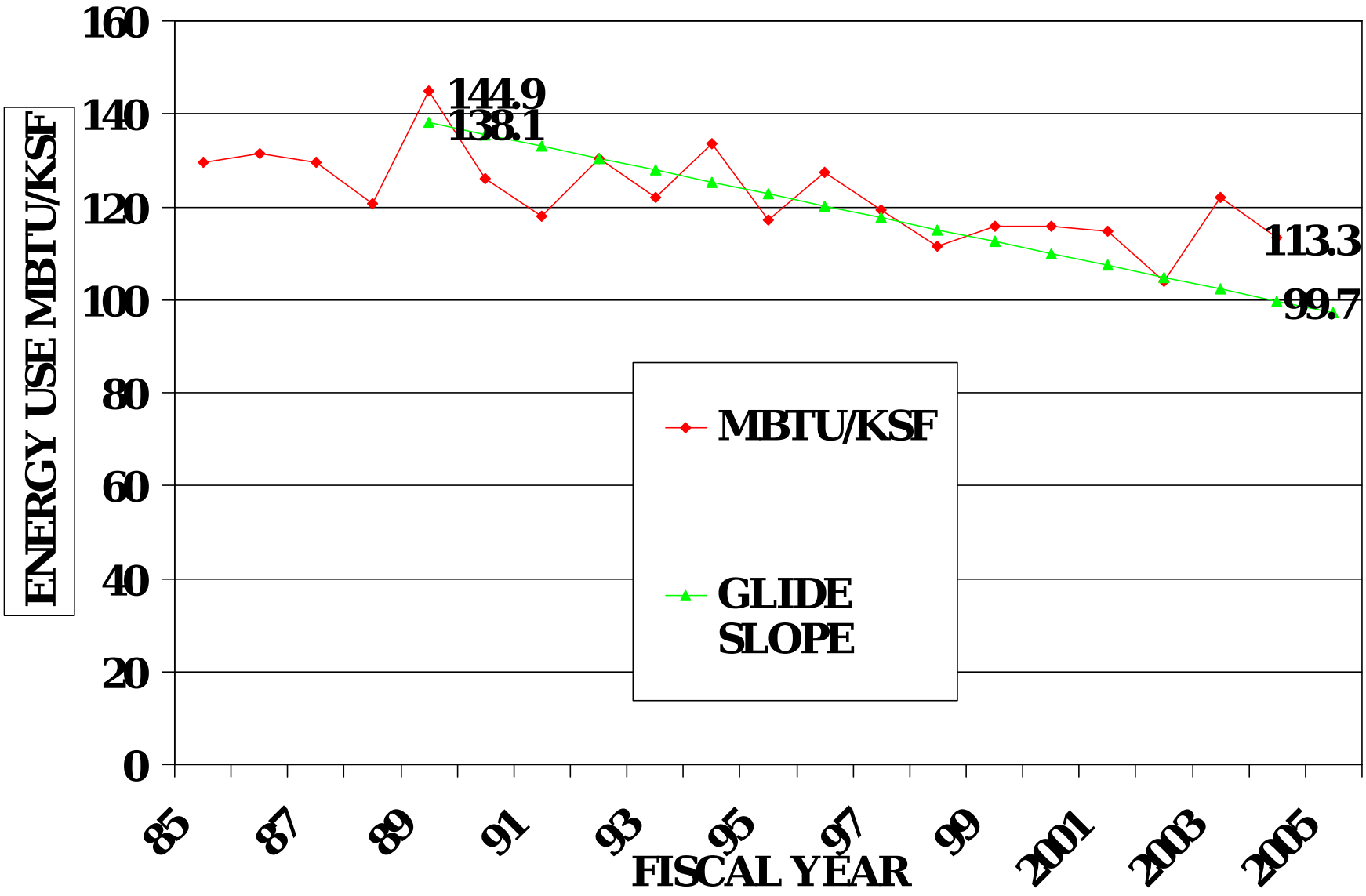
MISSION STATEMENT

- **To efficiently manage the facility energy on Installation and Family Housing**
- **To reduce energy use and costs while maintaining or improving readiness and quality of life**

ASSIGNED ENERGY GOALS

- A explanation of assigned energy goals and progress toward goals is included in the handout.
- Fort Drum is increasing energy efficiency
- Fort Drum did not meet the FY04 goal

FORT DRUM UTILITY CONSUMPTION



ENERGY CONSERVATION PROJECTIONS

FISCAL YR	MBTU	KSF	MBTU/KSF	GOAL
99	1,452,942	12,558	115.70	112.48
2000	1,458,244	12,589	115.83	109.92
2001	1,448,346	12,630	114.68	107.36
2002	1,326,608	12,751	104.04	104.80
2003	1,531,799	12,558	121.98	102.24
2004	1,436,206	12,673	113.33	99.68
2005				97.13

PAST ENERGY PROJECTS

- Gas conversion projects
  - Pine Plains (Old Cantonment)
  - Mnt View (New Cantonment)
  - Housing 4700 area
- Lighting projects
  - Have retrofitted most of the Installation
- Insulation projects
  - Attics on the Pine Plains Cantonment
  - BOQ insulation projects
- Building remodeling projects
- Housing furnace and window replacements
- Heating and A/C control projects via Trane Tracer

FORT DRUM'S FY04 ENERGY COSTS

- On Post and Ranges $ 9.92 M
- Family Housing (On Post & 801) $ 6.7 M
- Total FY-04 $ 16,611,718
  - Electric $ 8.7 M
  - Natural gas $ 6.5 M
  - Fuel oil $ 759 K
  - LPG $ 565 K

Past Energy Projects

- Gas Conversion Projects
  - Pine Plains (South Post) Fuel Oil
  - Mnt View (North Post) Heat Plant HTHW
- Lighting Projects
  - Have retrofitted most of the Post
- Insulation Projects
  - Attics on the South Post
  - BOQ insulation projects
- Building Remodeling Projects
- New Buildings designed to be energy efficient

PAST FUNDING PROGRAMS

- **Fort Drum has participated in a number of Army, Dept of Energy (DOE) and State programs in the past:**
  - **FORSCOM/TVA Program FY87-91 ($ 2.45 M)**
  - **FEMP FY94-99 ($ 17.5 M)**
  - **Utilities Modernization FY99 ($ 8.5M)**
  - **NYSERDA FY98-03 for studies ($ 118 K)**

PRESENT FUNDING PROGRAMS

- There are a number of current funding programs that Fort Drum is presently participating in
- As in the past they are a combination of Army, Dept of Energy (DOE) and State programs
  - Energy Conservation Investment Program (ECIP)
  - Energy Saving Performance Contracting (ESPC)
  - New York State Energy Research and Development Authority (NYSERDA)- for studies and rebates

ENERGY CONSERVATION INVESTMENT PROGRAM

- **ECIP has been a funding source for large scale energy conservation projects for many years**
- **It is administered by the ASCIM office**
- **The DOD is budgeted for $50M a year**
- **For Ft Drum FY-03,04 ECIP funds $ 4.8 M total**
- **For FY05 Fort Drum has rec'd approval for three ECIP projects:**
  - **Solar Walls $3.0 M**
  - **FY05 Utility Monitoring and Control System (UMCS) $$$M**
  - **LED taxiway lighting $ 530 K**

ENERGY SAVING PERFORMANCE CONTRACTING

- **Trane, Siemens and Johnson controls have finished their ESPC projects for bldgs on the new Cantonment and airfield**
- **Projects included:**
  - **Infrared heating, high efficiency boilers**
  - **LPG to Natural gas conversion**
  - **Demand ventilation**
  - **Upgrade existing DDC control systems**
  - **Lighting retrofits, interior, exterior, traffic**
  - **Equipment recommissioning**
  - **Compressed air savings**

ENERGY SAVING PERFORMANCE CONTRACTING

(con't)

- **Summary of Projects**

Firm	Award	Expire date
Trane	$ 6.0 M	2009
Siemens	$ 2.78M	2013
Johnson	$ 4.6 M	2013

Additional work will be planned this FY

ENERGY AWARENESS PROGRAM

- **Key Elements of the Energy Awareness Program include:**
  - **Building Monitor Program**
  - **DCI Inspection Program**
  - **Building Deactivation**

RESIDENTIAL COMMUNITIES INITIATIVE (RCI) PROGRAM

- **Housing is slated to be privatized through the RCI by FY06**
- **Recommended to the RCI planning team is the inclusion of the NYSEDRA Energy Star Program**
- **Energy Star provides for quality construction with 30% less energy used than a code built building**
- **Buildings are performance tested prior to receiving the Energy Star rating**
- **Families will receive a comfortable, energy efficient unit**

FY05 ACTIONS SUMMARY

Participate with Corp of Engineers planning on Post expansion

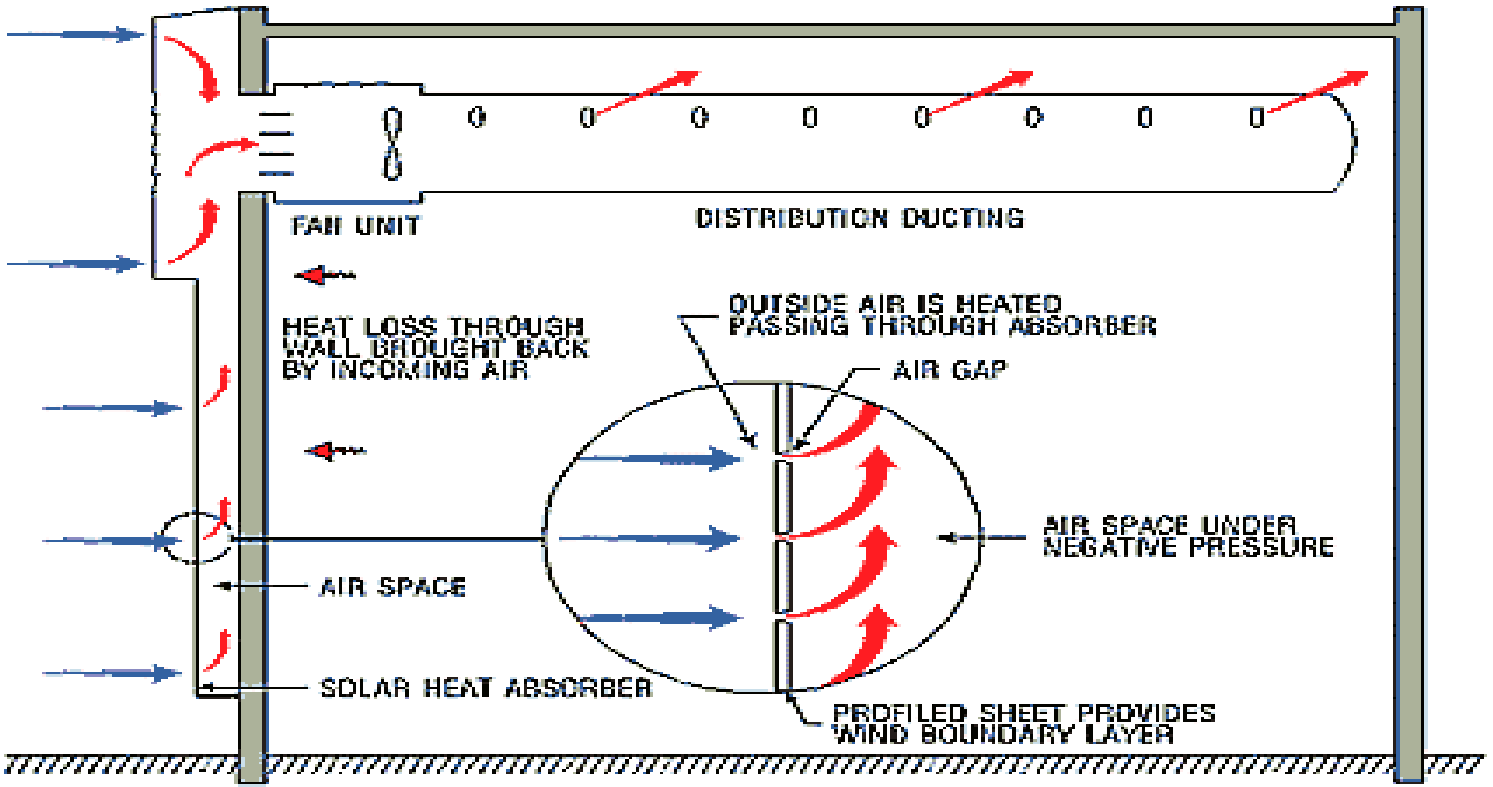
- **Ongoing design reviews**
- **ECIP projects**
- **ESPC in more facilities**
- **Energy awareness monitoring program**
- **Research project with CERL**

SOLAR WALLS at Ft DRUM

- Fort Drum will install solar preheat panels on 34 buildings covering 143,000 sq ft
- Medium Bronze will be the panel color
- Project is $ 3.3 M with a calculated savings of Mbtu , $ 300,00 a year in gas savings
- Simple payback is 9.7 years, SIR 1.43
- Will use as heating assist daily during setback
- Will help with air quality issues in some of the older buildings

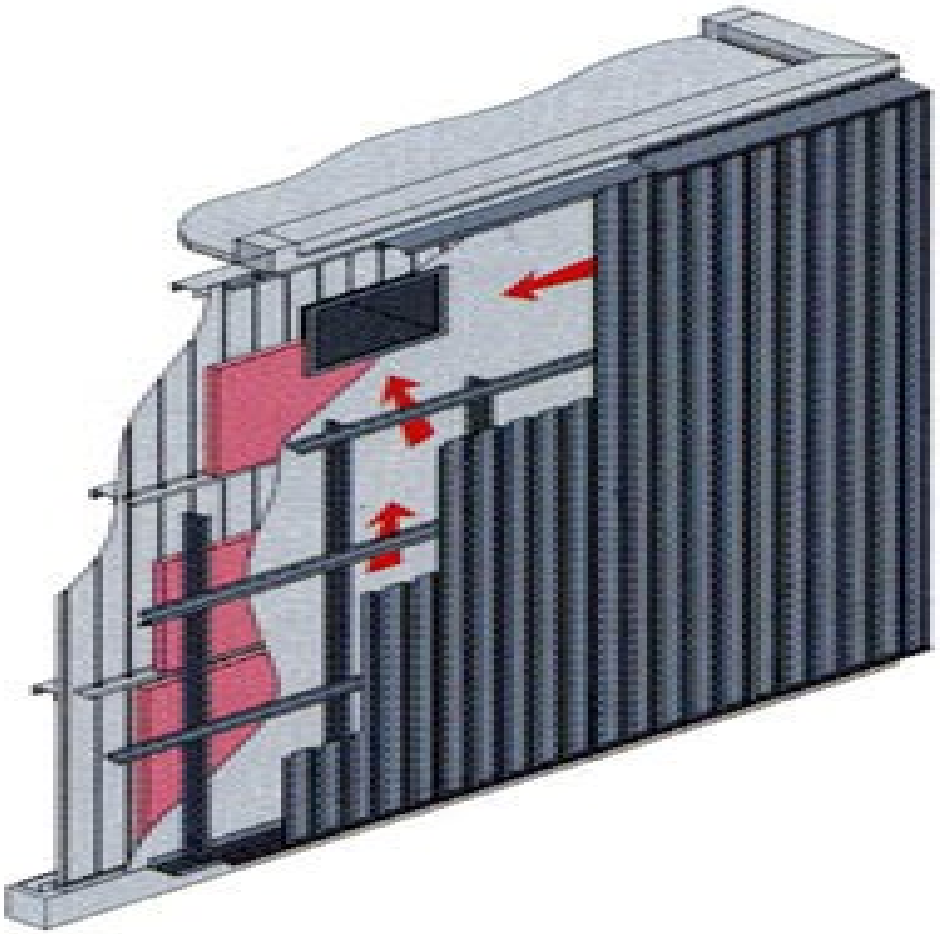
SOLAR WALLS

- **Winter operation of the system**

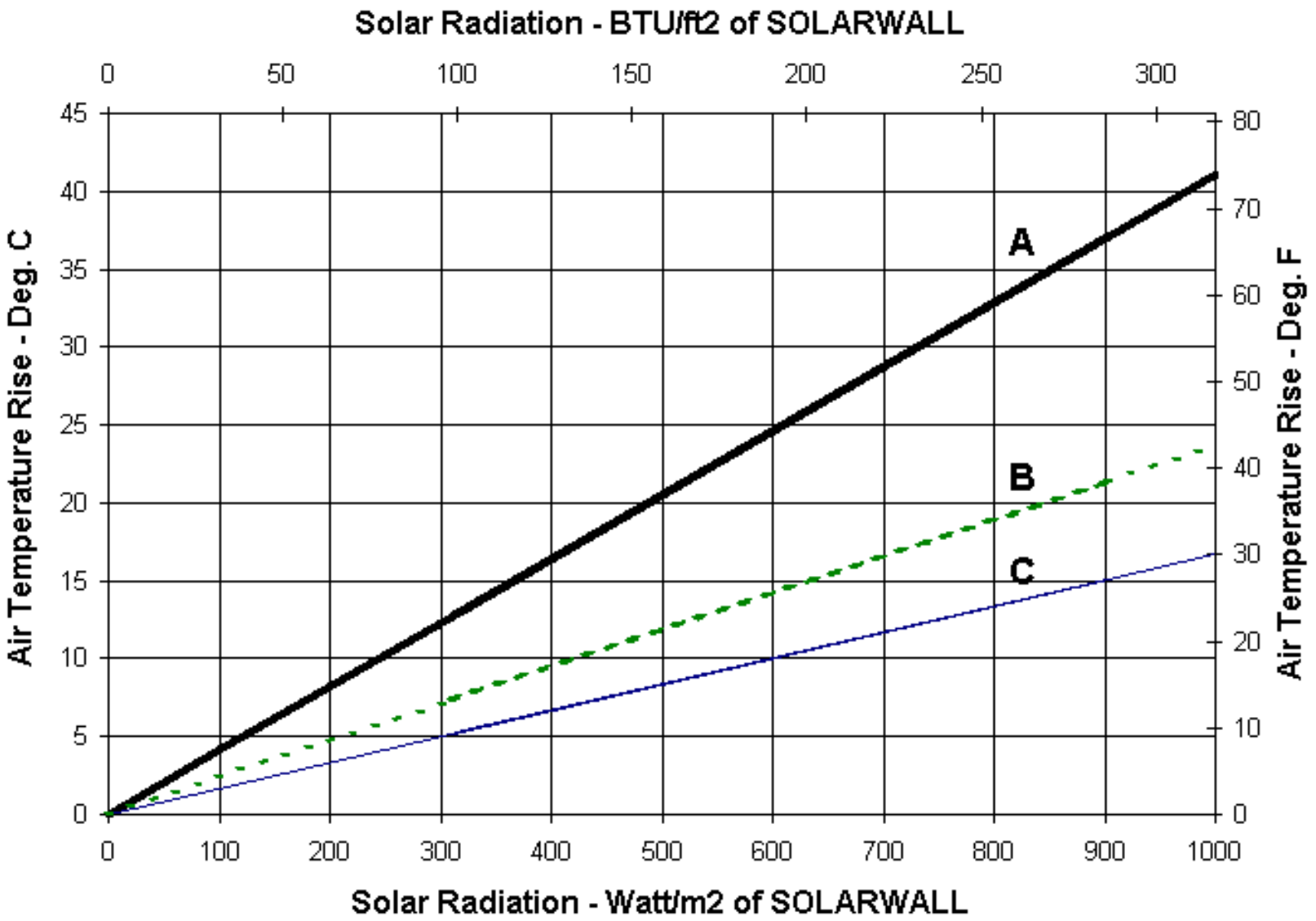

FAN UNIT
DISTRIBUTION DUCTING
HEAT LOSS THROUGH WALL BROUGHT BACK BY INCOMING AIR
OUTSIDE AIR IS HEATED PASSING THROUGH ABSORBER
AIR GAP
AIR SPACE UNDER NEGATIVE PRESSURE
AIR SPACE
SOLAR HEAT ABSORBER
PROFILED SHEET PROVIDES WIND BOUNDARY LAYER

SOLAR WALLS

- **WALL CONSTRUCTION**



AIR TEMPERATURE RISE vs. SOLAR RADIATION for Various Air Flow Rate.



QUESTIONS AND COMMENTS